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(21) Application number: 98106843.0

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AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE

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AL LT LV MK RO SI

(30) Priority: 23.04.1997 US 839112

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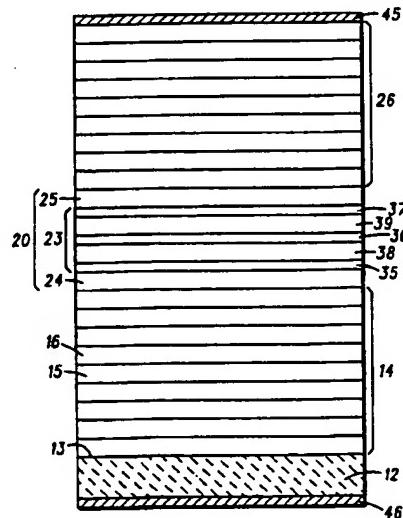
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(54) Long wavelength VCSEL

(57) A VCSEL for emitting long wavelength light including a GaAs (111) substrate element (12), a first mirror stack (14) with mirror pairs in a GaAs/AlGaAs material system lattice matched to a GaInAsN active region (20) with an active structure (23) sandwiched between a first cladding region (24) adjacent the first mirror stack (14) and a second cladding region (25), the active structure (23) including a nitride based quantum well (35, 36, & 37), and a second mirror stack (26) lattice matched to the second cladding region (25) and having mirror pairs in a GaAs/AlGaAs material system.

FIG. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 6843

DOCUMENTS CONSIDERED TO BE RELEVANT												
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)									
Y	T MIYAMOTO, T. TAKADA, ET AL: "Design and expected characteristics of 1.3 μ m GaInNAs/GaAs vertical cavity surface emitting lasers" QUANTUM OPTOELECTRONICS 1997, TECHNICAL DIGEST SERIES, POSTCONFERENCE EDITION, vol. 9, 19 - 21 March 1997, page 126-128 XP002075850 Incline Village NV USA * the whole document * ---	1-9	H01S3/19 H01S3/085									
Y	US 5 383 211 A (VAN DE WALLE CHRIS ET AL) 17 January 1995 * column 5, line 19-39 *	1-9										
A	KONDOW M ET AL: "A NOVEL MATERIAL OF GAINAS FOR LONG-WAVELENGTH-RANGE LASER DIODES WITH EXCELLENT HIGH-TEMEPRATURE PERFORMANCE" INTERNATIONAL CONFERENCE ON SOLID STATE DEVICES AND MATERIALS, 21 August 1995, pages 1016-1018, XP000544869 * the whole document *	1-9	TECHNICAL FIELDS SEARCHED (Int.Cl.6) H01S									
A	EP 0 723 303 A (HEWLETT PACKARD CO) 24 July 1996 * the whole document *	1-9										
<p>The present search report has been drawn up for all claims</p> <table border="1"> <tr> <td>Place of search THE HAGUE</td> <td>Date of completion of the search 28 August 1998</td> <td>Examiner Claessen, L</td> </tr> <tr> <td colspan="2">CATEGORY OF CITED DOCUMENTS</td> <td>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</td> </tr> <tr> <td colspan="2"> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document </td> <td></td> </tr> </table>				Place of search THE HAGUE	Date of completion of the search 28 August 1998	Examiner Claessen, L	CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		
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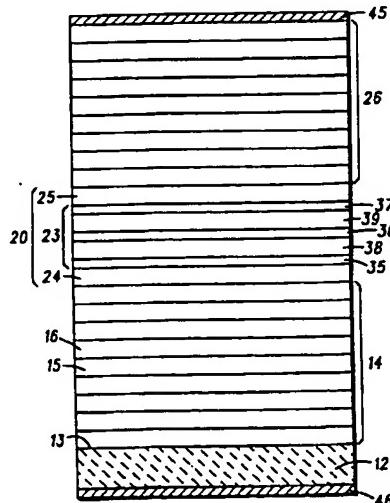
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Long wavelength VCSEL

Patent Number: EP0874428, A3
Publication date: 1998-10-28
Inventor(s): RAMDANI JAMAL (US); JIANG WENBIN (US); LEBBY MICHAEL S (US)
Applicant(s):: MOTOROLA INC (US)
Requested Patent: JP10303515
Application EP19980106843 19980415
Priority Number(s): US19970839112 19970423
IPC Classification: H01S3/19 ; H01S3/085
EC Classification: H01S5/183, H01S3/19B4C4A
Equivalents: TW396668, US5943359

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Abstract

A VCSEL for emitting long wavelength light including a GaAs (111) substrate element (12), a first mirror stack (14) with mirror pairs in a GaAs/AlGaAs material system lattice matched to a GaInAsN active region (20) with an active structure (23) sandwiched between a first cladding region (24) adjacent the first mirror stack (14) and a second cladding region (25), the active structure (23) including a nitride based quantum well (35, 36, & 37), and a second mirror stack (26) lattice matched to the second cladding region (25) and

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